

## What is Claimed:

1                   1.     A computer aided method for determining whether an individual  
2     is a susceptible to contracting a genetically-linked illness comprising the steps of:

3                   establishing a connection between the individual in a first computing  
4     environment and a data gathering and evaluation system in a second computing  
5     environment, distinct from the first computing environment;

6                   receiving, at the second computing environment, a selection from the  
7     individual of a particular genetically linked illness from a plurality of genetically  
8     linked illnesses;

9                   retrieving data relevant to the specific illness from a first database  
10    accessible to the second computing environment;

11                  prompting the individual for family history data specific to the selected  
12    illness, receiving the family history data provided by the individual and storing the  
13    received family history data into a second database accessible to the second computing  
14    environment;

15                  analyzing, in the second computing environment, the received family  
16    history data using the retrieved data relevant to the selected illness to determine the  
17    susceptibility of the individual to the selected illness; and

18                  generating a report including an indication of the susceptibility of the  
19    individual and transmitting the report to the first computing environment.

1                   2.     A method according to claim 1, further comprising the step of  
2     prompting the individual to receive genetic counseling if the report indicates that the  
3     individual is susceptible to the selected illness.

1                   3.     A method according to claim 1, wherein the first database  
2     includes educational materials relevant to the selected illness and the method further

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3 includes the step of presenting the educational materials relevant to the selected illness  
4 to the individual for review at the first computing environment.

1           4.     A method according to claim 1, wherein the first computing  
2 environment is remote from the second computing environment and the step of  
3 establishing the connection between the first computing environment and the second  
4 computing environment further includes the step of establishing a secure connection  
5 between the first computing environment and the second computing environment.

1           5.     A method according to claim 1, further including the step of  
2 storing any information that identifies the individual only on the first computing  
3 environment and associating a unique identifier with the individual and the family  
4 history data stored in the second database.

1           6.     A method according to claim 1 wherein the step of generating the  
2 report includes the step of including specific data from the family history in the  
3 report.

1           7.     A method according to claim 1, wherein the step of analyzing the  
2 received family history data includes the step of summarizing the family history data  
3 to generate summary data and storing the summary data.

1           8.     A method according to claim 1, wherein the step of analyzing the  
2 received family history data includes the step of performing a statistical risk analysis  
3 process on the family history data.

1           9.     A method according to claim 1, wherein the step of analyzing the  
2 received family history data includes the step of performing a heuristic risk analysis  
3 process on the family history data.

1           10.    A method according to claim 9, wherein the step of analyzing the  
2 received family history data further includes the step of performing a statistical risk  
3 analysis process on the family history data.

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11. A computer aided method for determining whether an individual is susceptible to contracting a genetically-linked illness comprising the steps of:

establishing a connection between the individual in a first computing environment and a data gathering and evaluation system in a second computing environment, distinct from the first computing environment;

receiving, at the second computing environment, a selection from the individual of a particular family history;

retrieving and displaying data relevant to the specific family history and retrieving information relevant to a genetic condition associated with the family history from a database accessible to the second computing environment;

receiving information from the individual which modifies the specific family history;

analyzing, in the second computing environment, the modified family history data to determine the susceptibility of the individual to the genetic condition; and

generating a report including an indication of the susceptibility of the individual to the genetic condition and transmitting the report to the first computing environment.

12. A scalable computer architecture for an on-line genetic testing system comprising:

a presentation server which establishes respective connections with a plurality of users and includes a further plurality of input forms for obtaining family history information and a plurality of output forms for reporting results of family history evaluation;

an applications server which includes:

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8 means for receiving data entered by the plurality of users;  
 9 means for retrieving data relevant to each user from at least one  
 10 database;

11 means for selecting from among the plurality of forms, a  
 12 respective plurality of the input forms to be sent to the plurality of users in  
 13 order to obtain family history data received from the plurality of users;

14 means for storing the family history data into the at least one  
 15 database;

16 means for analyzing the family history data to determine a risk for  
 17 genetic illness; and

18 means for selecting from among the plurality of forms, a  
 19 respective plurality of the output forms and for entering data from the analysis  
 20 of the family history into the output forms; and

21 a database server which holds the at least one database.

1 13. A scalable computer architecture according to claim 12, further  
 2 including:

3 means for eliciting family history data collection in an accessible,  
 4 convenient and appropriate manner from at least one of: a) members of the public, b)  
 5 members of the medical professions who are not expert geneticists and c) expert  
 6 geneticist clinicians and researchers.

1 14. A scalable computer architecture according to claim 12, further  
 2 including:

3 means for presenting risk analysis and other family history based data an  
 4 accessible, convenient and appropriate manner to at least one of 1) members of the

FOOTNOTES

public, 2) members of the medical professions who are not expert geneticists and 3) expert geneticist clinicians and researchers.

15. A scalable computer architecture according to claim 12, further comprising an access control mechanism which implements a permission scheme to allow appropriate access to the stored family history data to the patient who entered the data, clinical genetics specialists, non-genetics-expert clinicians and systems management personnel and to control access to the family history data by each of these individuals.

16. A scalable computer architecture according to claim 12, wherein the family history data includes a plurality of family histories.

17. A scalable computer architecture according to claim 12, wherein the presentation server, the applications server and the database server are implemented on a single computer system.

18. A scalable computer architecture according to claim 12, wherein the presentation server, the applications server and the database server are implemented on respectively different computer systems.

19. A scalable computer architecture according to claim 18, wherein the applications server includes a control server and an analysis server which are implemented on at respectively different computer systems.

20. A scalable computer architecture according to claim 18, wherein each of the presentation server and the applications server are implemented using multiple computer systems.

21. A method for regulating the allocation of genetic testing resources among members of an organization, the method comprising the steps of:

performing on-line family history evaluation to identify individuals from the organization who may be susceptible to genetically related illnesses;

5 automatically scheduling genetic counseling for each of the identified  
6 individuals to determine if the individual is a candidate for genetic testing; and

7 scheduling genetic testing for any individual determined to be a  
8 candidate during the genetic counseling.

1 22. A method according to claim 21, wherein:

2 the step of performing the on-line family history evaluation includes the  
3 steps of:

4 prompting a user to enter family history information concerning  
5 one of the members of the organization, the information including data related  
6 to a specific genetic illness;

7 developing a family tree for the one member, including risk  
8 factors for each entry in the family tree; and

9 analyzing the family tree to determine a risk factor for the one  
10 member and reporting the risk factor to the user; and

11 the step of automatically scheduling genetic counseling for each of the  
12 identified individuals includes the step of transferring the respective family tree for  
13 each of the identified individuals to a respective one of the genetic counselors.

1 23. A method according to claim 21, further including the step of  
2 providing each of the identified individuals with educational material on the  
3 genetically related illnesses before automatically scheduling the genetic counseling.

1 24. A method according to claim 21, wherein the step of  
2 automatically scheduling genetic counseling includes the step of prompting the user to  
3 select counseling from a group consisting of on-line counseling, telephone counseling  
4 and in-person counseling.

1                   25.    A method for regulating the allocation of genetic testing resources  
2   among members of an organization, the method comprising the steps of:

3                   performing on-line family history evaluation to identify individuals from  
4   the organization who may be susceptible to genetically related illnesses;

5                   scheduling genetic testing only for individual determined to be a  
6   susceptible to genetically related illnesses by the on-line family history evaluation.

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